



#15/Resp
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Saurer
PATENT

Attorney Docket No. 0553-0246

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)
Koichiro Tanaka)
Serial No.: 09/812,529)
Filed: March 20, 2001)
Examiner: R. Booth)
Art Unit: 2812)
For: METHOD OF MANUFACTURING A)
SEMICONDUCTOR DEVICE)

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RESPONSE

We are receipt of the Office Action dated February 12, 2003, and the following remarks are made in light thereof.

Claims 1-41 are pending in the application. Pursuant to the Office Action, Claims 1-13 are allowed, which applicant gratefully acknowledges. Claims 14-17 and 23-30 stand rejected under 35 USC 103 as being unpatentable over Yamazaki et al. 5,365,080 in view of Yamazaki et al. 5,627,084. Claims 18-22 and 31-40 stand rejected under 35 USC 103 for obviousness over Yamazaki et al. '080 and Yamazaki et al. '084, and further in view of Kato et al. 5,589,406.

In the method of the present invention, a first laser beam and a second laser beam irradiate an amorphous semiconductor film. The first laser beam is an excimer laser beam (independent claims 15, 16, 19 and 20), with a wavelength of 308nm (independent claims 14 and 18) or a wavelength of from 126 to 370nm (independent claims 17, 21 and 22). The second laser beam has a wavelength of 532nm (independent claims 14, 15, 17, 18, 19, and 21) or a wavelength of 370 to 650nm (independent claims 16, 20 and 22).

Yamazaki '080 discloses YAG laser radiation for the second laser annealing step. However, Yamazaki '080 does not disclose a second harmonic of a YAG laser radiation.

Yamazaki '084 discloses a second harmonic of a YAG laser. However, in the present invention the first and second laser beams conduct first and second laser irradiation to crystallize the amorphous semiconductor film. Specifically, the first laser beam crystallizes the amorphous semiconductor film into a first crystalline semiconductor film. To further crystallize the first crystalline semiconductor film into a second crystalline semiconductor film, the second laser beam is used. By use of the second laser beam, amorphous regions of the first crystalline semiconductor film are crystallized without disturbing the already-crystallized regions of the first

crystalline semiconductor film. Thus, a second crystalline semiconductor film having a high uniformity is obtained.

The second harmonic of a YAG laser beam used in the present invention is suitable for crystallization of a semiconductor film. However, Yamazaki '080 does not suggest any wavelength for the YAG laser radiation used in the second laser annealing step.

Consequently, for the foregoing reasons applicant asserts that none of the independent claims 14-22 would have been obvious over the cited art. Claims 23-40, all of which are dependent claims, would not have been obvious for at least the same reasons.

Accordingly, applicant asserts that claims 14-40 are allowable, and respectfully requests reconsideration and allowance of these claims.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read "Stephen B. Heller", is written over a horizontal line.

Stephen B. Heller
Registration No. 30,181

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28124

PTO/SB/21 (01-03)

Approved for use through 04/30/2003. OMB 0651-0031

U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>	Application Number	09/812,529
	Filing Date	March 20, 2001
	First Named Inventor	Koichiro Tanaka
	Art Unit	2812
	Examiner Name	R. Booth
Total Number of Pages in This Submission	Attorney Docket Number	0553-0246

ENCLOSURES (Check all that apply)		
<input checked="" type="checkbox"/> Fee Transmittal Form(duplicate)	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to Group
<input checked="" type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to Group (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Terminal Disclaimer	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Request for Refund	- Response to Office Action
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Firm or Individual	Stephen B. Heller
Signature	<i>Stephen B. Heller</i>
Date	May 7, 2003

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I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this date: May 7, 2003	
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Signature	<i>Kristine Callahan</i>
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PTO/SB/17 (01-03)
Approved for use through 04/30/2003. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

FEE TRANSMITTAL for FY 2003

Effective 01/01/2003. Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$) 180.00

Complete if Known

Application Number	09/812,529
Filing Date	March 20, 2001
First Named Inventor	Koichiro Tanaka
Examiner Name	R. Booth
Art Unit	2812
Attorney Docket No.	0553-0246

METHOD OF PAYMENT (check all that apply)

☒ Check ☐ Credit card ☐ Money Order ☐ Other ☐ None

☒ Deposit Account:

Deposit
Account
Number
Deposit
Account
Name

50-1039

Cook, Alex, McFarron, Manzo

The Commissioner is authorized to: (check all that apply)

☐ Charge fee(s) indicated below ☐ Credit any overpayments

☒ Charge any additional fee(s) during the pendency of this application

☐ Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Small Entity Fee Code	Fee Description	Fee Paid
1001 750	2001 375	Utility filing fee	
1002 330	2002 165	Design filing fee	
1003 520	2003 260	Plant filing fee	
1004 750	2004 375	Reissue filing fee	
1005 160	2005 80	Provisional filing fee	

SUBTOTAL (1) (\$)

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

	Extra Claims	Fee from below	Fee Paid
Total Claims	-20** =	X	
Independent Claims	-3** =	X	
Multiple Dependent			

Large Entity Fee Code	Small Entity Fee Code	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 84	2201 42	Independent claims in excess of 3
1203 280	2203 140	Multiple dependent claim, if not paid
1204 84	2204 42	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) (\$)

**or number previously paid, if greater; For Reissues, see above

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Small Entity

Fee Code	Fee (\$)	Fee Code	Fee (\$)	Fee Description
1051 130		2051 65		Surcharge - late filing fee or oath
1052 50		2052 25		Surcharge - late provisional filing fee or cover sheet
1053 130		1053 130		Non-English specification
1812 2,520		1812 2,520		For filing a request for ex parte reexamination
1804 920*		1804 920*		Requesting publication of SIR prior to Examiner action
1805 1,840*		1805 1,840*		Requesting publication of SIR after Examiner action
1251 110		2251 55		Extension for reply within first month
1252 410		2252 205		Extension for reply within second month
1253 930		2253 465		Extension for reply within third month
1254 1,450		2254 725		Extension for reply within fourth month
1255 1,970		2255 985		Extension for reply within fifth month
1401 320		2401 160		Notice of Appeal
1402 320		2402 160		Filing a brief in support of an appeal
1403 280		2403 140		Request for oral hearing
1451 1,510		1451 1,510		Petition to institute a public use proceeding
1452 110		2452 55		Petition to revive - unavoidable
1453 1,300		2453 650		Petition to revive - unintentional
1501 1,300		2501 650		Utility issue fee (or reissue)
1502 470		2502 235		Design issue fee
1503 630		2503 315		Plant issue fee
1460 130		1460 130		Petitions to the Commissioner
1807 50		1807 50		Processing fee under 37 CFR 1.17(q)
1806 180		1806 180		Submission of Information Disclosure Stmt
8021 40		8021 40		Recording each patent assignment per property (times number of properties)
1809 750		2809 375		Filing a submission after final rejection (37 CFR 1.129(a))
1810 750		2810 375		For each additional invention to be examined (37 CFR 1.129(b))
1801 750		2801 375		Request for Continued Examination (RCE)
1802 900		1802 900		Request for expedited examination of a design application

Other fee (specify)

*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$) 180.00

SUBMITTED BY

(Complete if applicable)

Name (Print/Type)	Stephen B. Heller	Registration No. (Attorney/Agent)	30,181	Telephone	312-236-8500
Signature	<i>Stephen B. Heller</i>	Date	May 7, 2003		

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